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A serious southern pine beetle situation is developing rapidly in the Big Thicket area of southeast Texas. In the last decade, most southern pine beetle trouble has occurred in this region and in north-central Alabama and southwest Mississippi. Epidemics have come and gone in these areas, and new outbreaks have threatened almost constantly. At the moment, the beetle's worst threat is in Texas, other Midsouth infestations having reached a comparatively low level. An unusually cold winter killed large numbers of the beetles in northern Alabama, and controls were effective elsewhere in this State and in Mississippi.

Early summer floods in east Texas, Louisiana, and nearby States have made forests more susceptible to black turpentine beetle attack. The beetles have been active in many flatwoods forests logged the past winter. Mechanical injury of tree roots has been excessive because wet soil has become deeply rutted, and multiple relocation of woods roads has been necessary. This damage, plus widespread flooding, has resulted in numerous outbreaks and created conditions that are ideal for further trouble.

Severe and repeated defoliation of young pines by the red-headed pine sawfly has been widespread, and control has been necessary in some instances. A black-headed sawfly, heretofore unreported in the South, defoliated shortleaf pines in several States, but natural enemies now appear to have brought it under control.

Southern Pine Beetle

Texas. --A southern pine beetle outbreak is developing rapidly in the Big Thicket area of southeast Texas, where the 1950-51 outbreak was very destructive. Timber stands have been weakened by several years of severe drought and more recently by prolonged flooding--some dying trees show no signs of insect attack. The beetle outbreak area involves at least 65,000 acres in Hardin County. It includes several large industrial ownerships and numerous small holdings.

Scattered beetle brood trees were found near Honey Island during the winter and early spring. An aerial survey in April, covering 1-1/2 million acres, located ten groups of red-topped pines, most of which had been attacked by the southern pine beetle. Subsequent inspections revealed other spot infestations and scattered beetle trees.

In early May, more intensive flights were made by industrial foresters over their lands and adjoining ownerships in Hardin County. Additional spots were observed and further ground inspections confirmed the opinion that a serious situation was fast developing.

At an emergency meeting, State, industrial, and Federal foresters and entomologists made plans for an aggressive control program in which the State, industry, and the U. S. Forest Service would cooperate.

At the start, control efforts were complicated because the beetles were mostly in scattered trees. The crowns of many infested trees had not faded and were indistinguishable from the air. Furthermore, much of the area was waist-deep in floodwater, without good roads, and covered with dense underbrush. The cost of scouting and treatment was \$8 per tree.

In early June, the weather became hot and dry. Most beetle areas are now accessible and cutting and spraying of infested trees is progressing steadily and at less cost. As is usual at this time of year, the beetles are attacking groups of trees rather than single ones, so that spotting and treatment are much easier. Approximately 60 such groups have been observed and control crews are treating them.

Broods are now developing rapidly and young beetles are about ready to leave the trees by the time the crowns show slight fading. Control crews have been increased in an attempt to check further spread of the beetles.

Alabama. --During February, temperatures in mountainous areas of northern Alabama dropped to 20°F. and lower. In March, examination of infested pines near the Talladega National Forest showed that the freeze

had caused heavy mortality of the southern pine beetle. All adults and larvae in thin-barked Virginia pine were dead, while populations in loblolly pine had been reduced two-thirds. Most of the young larvae near the inner surface of the bark were dead and blackened. Larvae that were larger and near the outer bark were alive. Larvae of predaceous beetles (Cleridae and Ostomidae) had survived and woodpecker work on the upper stems of infested trees was extensive. Rangers on the Bankhead National Forest have found no active southern pine beetle spots since the freeze. On the Talladega National Forest, the beetle is considered endemic and static.

Last August, an aerial pest-detection survey over 9-1/2 million acres of Federal and private timberlands disclosed a substantial increase of the beetle on private lands in east-central Alabama, near Lake Martin. Timber owners were informed of the danger and some of them took steps to control the beetles.

In May 1958, a similar survey was made and thirty-four groups of red-topped pines were seen. None, however, displayed fading foliage indicative of active infestation. About a two-thirds reduction in groups of red-topped pines had taken place since the previous flight. Ground inspections around Lake Martin showed that beetles had emerged. There was no evidence of winter beetle mortality, but no living broods could be found in the immediate vicinity. It is possible that active populations may have been present in trees where crowns had not yet faded.

Mississippi. --Occasional fading pines containing southern pine beetle broods have been found in or near former beetle areas on the Homochitto National Forest. Ranger personnel have made periodic operational flights, but no spot infestations have been found this year.

Beetle populations are also low on private lands in the vicinity of the Homochitto. Brood trees on industrial land were cut, sprayed, and salvaged during the winter. Recent reconnaissance flights by the Mississippi Forestry Commission and industry have found no active beetle spots.

Black Turpentine Beetle

The black turpentine beetle is the most widespread and troublesome forest insect in the Midsouth today. Unlike the southern pine beetle, this species does not increase rapidly and spread over extensive areas, but rather builds up slowly and steadily in localized areas where stands have been disturbed. It is a continuing problem on all types of timberland ownerships.

On the Kisatchie National Forest, for example, 2 million board feet of valuable timber were salvaged in the past year from cutting and floodwater areas where infestations have developed. The infestation reduced the sale value of the timber as much as \$30 per thousand board feet. Last March, in areas logged the previous winter, beetles had infested approximately 39,000 stumps and 1,000 residual trees. The trees were lightly attacked and not in immediate danger, but past experience on the Forest and the widespread nature of the infestation caused concern. Had the number of infested stumps and trees been small, it would have been advisable to wait and observe what the developing beetles would do. Under the circumstances, however, the risk was considered to be too great. If the beetles moved from the stumps to the residual stand, it would be too late to prevent heavy losses. Furthermore, cutting plans called for the removal of 40,000 trees each month through the early summer. Stumps of these trees would further favor beetle increases.

It was decided to start an all-out program to destroy existing broods. Three-man crews with rakes and sprayers cleared the litter from around infested stumps and trees and treated the soil and bark with BHC in fuel oil. By mid-May, beetles had been checked in the infested areas and crews were routinely spraying fresh-cut stumps following regular harvesting operations. This procedure is to be followed as long as fresh stumps are attacked.

Study plots were established to determine what would happen if infested stumps and trees were not sprayed. On these plots beetles continued to invade infested trees and also attacked other trees on the area. From these observations, it is felt that the decision to carry out control was justified.

Torrential rains during the spring and early summer have again flooded high-quality pine stands on the Kisatchie around Saline Lake. When the waters recede the weakened trees will probably be attacked by the black turpentine beetle, as they were last year (see SOUTHERN FOREST PEST REPORTER No. 16, August 19, 1957).

Ips Bark Beetles

No unusual Ips beetle activity has been reported recently. Most attacks now occur in scattered lightning-struck trees, in timber damaged by wildfire and tornadoes, and in small groups of trees in over-dense stands. The situation is considered normal for this time of year.

In northern Alabama, near-zero winter temperatures killed most of the large Ips beetles (calligraphus). Small Ips beetles (avulsus) in the crowns and logging slash were unaffected.

As in the past, Ips populations will probably build up during the hot, dry summer. The rate of increase will depend largely upon rainfall deficiency and stand densities.

A New Pine Sawfly

Until recently, three species of pine sawflies were known to occur in the Midsouth--the red-headed pine sawfly (Neodiprion lecontei), the loblolly pine sawfly (Neodiprion taedae linearis), and a little-known black-headed species (Neodiprion exitans). A fourth species, collected in Arkansas and Louisiana, has been classified as a member of the Neodiprion virginianus complex, possibly an unnamed species.

Larvae of this fourth species have black heads and closely resemble exitans larvae. Identification is based on adult female characters, and larvae had to be reared to maturity before determination could be made. Larvae were first observed last fall and early winter defoliating shortleaf pine in Union County, Arkansas, and in several parts of Louisiana. Most infestations were spotty and involved large trees. Loblolly pines associated with defoliated shortleaf were not fed upon. The prepupae wintered in cocoons in the litter beneath defoliated trees. In this stage, parasitism and destruction by rodents were high. To date, there has been no evidence of spring feeding.

Other reports of black-headed pine sawflies defoliating loblolly and shortleaf pines were received from Texas and Mississippi during the late fall. Probably both exitans and the new species were implicated.

Current light defoliation of loblolly pines by black-headed sawfly larvae is scattered and of minor importance. Exitans is likely responsible but so far it has not been possible to obtain larvae for rearing.

Red-Headed Pine Sawfly

The red-headed pine sawfly (Neodiprion lecontei), which was unusually destructive to young pines throughout the summer and fall of 1957, is again active in many areas. The colorful larvae are easily recognized by their reddish heads and yellowish bodies covered with leopard-like spots.

Heavy defoliation of natural reproduction and planted loblolly and slash pines has recently been reported from southwest Louisiana and many points in east Texas. Fairly heavy mortality of trees defoliated in 1957 has been observed in plantations in Texas and elsewhere. Several

infested plantations have been sprayed with DDT to prevent further spread and repeated defoliation.

Miscellaneous Pine Insects

The loblolly pine sawfly (Neodiprion taedae linearis), which usually defoliates loblolly pine in southern Arkansas and northern Louisiana each spring, is scarce this year.

Reports of the pine webworm (Tetralopha robustella) from Arkansas, Texas, and Louisiana indicate rather severe localized infestations in 2- to 3-year-old plantations. The insect is common in the South but is generally of minor importance.

Damage to pine twigs by a pitch moth (Dioryctria sp.) has been noticeable in east Texas. The larvae, which are much larger than those of the pine tip moth, hollow out twigs of longleaf and other pines, causing the needles to turn yellow or red. This "flagging" of the branches has become conspicuous in some years. Pitch-moth larvae also infest pine cones and interfere with seed production.

In February and March, a weevil (Pissodes nemorensis) destroyed pine seedlings in a plantation at Silsbee, Texas. Weevils that had emerged from salvaged logs at a nearby mill made numerous feeding punctures in the bark of seedlings. Eggs were later deposited beneath the bark and the developing larvae girdled many young trees. Girdled seedlings were removed and burned to kill the broods. Others were treated with a 1-percent aldrin spray to avoid further damage.

Pissodes weevils are common in dead and dying pines and logs. Their S-shaped tunnels closely resemble those of the southern pine beetle. Damage to healthy seedlings is uncommon, except where unusual concentrations of weevils exist.

Tent Caterpillars

The forest tent caterpillar, presumably Malacosoma disstria, has defoliated many hardwoods in southern Alabama and Louisiana.

A reconnaissance flight along the Alabama River north of Mobile showed moderate to heavy defoliation over approximately 36,000 acres and complete defoliation on 85,000 acres. This infestation is slightly north of the outbreak area reported in the June 1954 issue of the RE-PORTER. Sweetgum is reported to be the favored hardwood. In early May, many caterpillars were dead from parasitism and disease.

Considerable defoliation of blackgum and tupelo was also observed on areas up to 100 square miles between New Orleans, Krotz Springs, and Alexandria, Louisiana. Sweetgum was not fed upon, although associated blackgum was completely stripped. Severest defoliation occurred along river bottoms and in swamps. In late April, half-grown caterpillars were found resting on the bark of leafless trees, apparently unable to migrate to other trees because of high water. By June, a second crop of leaves had been produced and the trees appeared normal.

Webs of the orchard tent caterpillar (Malacosoma americana) were common this spring on hardwoods throughout Oklahoma, Arkansas, east Texas, and Mississippi. Generally, defoliation was moderate to light.

FOREST DISEASES

Fusiform rust. --In 1957, weather was favorable for extensive infection of slash and loblolly pine by fusiform rust. Losses in nurseries were much above average, and infection rates in plantations and natural stands also were high. Plantations are most susceptible to damage during the first five years because on young trees many infections occur directly on the stems or on short branches where they can spread into the stem. Galls from last year's infections now are easily detectable. It may pay to examine young plantations with the idea of pruning off branches with cankers less than 15 inches from the stem; where the infection rate is high, such pruning may make the difference between an adequately stocked stand and one needing replanting. Only trees free of stem cankers should be pruned.

In older plantations most living cankered pines will reach pulpwood size. Even though cankered trees should be marked for early thinning, it is inadvisable to remove all cankered trees if this will unduly open up the stand. Trees with small stem cankers often will survive until the second thinning, when their removal may not have a detrimental effect on stand density.

Loblolly pine needle dying. --Needle browning and early defoliation of loblolly again occurred this spring in several States of the Midsouth. The fungus Hypoderma lethale was chiefly responsible, although some browning resulted from other causes, including the brown-spot fungus. A study was started in southern Arkansas to determine the effect of different types and amounts of defoliation on pine growth. So far no retardation of growth has been apparent in naturally infected stands.

Oak wilt quarantine. --Several countries now have regulations on the importation of oak lumber and logs from the United States. These

countries include Egypt, Germany, Italy, Portugal, Sweden, Union of South Africa, and Yugoslavia. Exporters are usually required to furnish a certificate that the oak products came from trees that grew in localities free of oak wilt or have been kiln-dried to a moisture content of 20 percent or less. Companies contemplating export of oak lumber or logs can get information about the required certificates from the U. S. Plant Quarantine Office at the port from which the lumber will be exported, or from the Plant Quarantine Division of the Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C.

